

Fluid Mechanics and Statistical Methods in Engineering

By Hugh L. Dryden, Theodore von Kármán, Anton A. Kalinske, Thomas K. Sherwood, Samuel S. Wilks, Walter A. Shewhart, Leslie E. Simon, Roscoe Pound. (University of Pennsylvania: Bicentennial Conference.) Pp. v+146. (Philadelphia: University of Pennsylvania Press; London: Oxford University Press, 1941.) 10s. 6d. net.

THE book is divided into two sections, each consisting of separate papers of a mainly expository character. The best idea of such heterogeneous material will be conveyed by enumeration. The first section, "Fluid Mechanics", contains four papers. "The Role of Transition from Laminar to Turbulent Flow in Fluid Mechanics", by H. L. Dryden, gives an introductory survey of the various aspects of the problem of transition, with diagrams. "Problems of Flow in Compressible Fluids", by T. von Kármán, gives a short review of a few problems connected with high-speed flow and high-speed motion of solids in fluid media with particular reference to aeronautics and exterior ballistics. "Investigations of Liquid Turbulence and Suspended Material Transportation", by A. A. Kalinske, gives an account of transportation of suspended matter in an open channel. "Mass Transfer and Friction in Turbulent Flow", by T. K. Sherwood, gives a brief discussion of various theories proposed in this connexion.

The second section, "Statistical Methods in Engineering", also contains four papers. "Contribution of Mathematical Statistics to Scientific Methodology", by S. S. Wilks, gives an account of the principles and scientific significance of the methodology for making predictions from observations, together with the appropriate measurements of confidence. "Contribution of Statistics to the Science of Engineering", by W. A. Shewhart, gives an outline of the theory of repetitive operations on order to provide the engineer with a method of regulating such operations to the best advantage. "Contribution of Statistics to the Development and Use of Purchasing Specifications and Standards of Quality", by L. E. Simon, outlines the genesis of a statistically sound acceptance specification. "The Relation of Statistical Quality Standards to Law and Legislation", by R. Pound, inquires whether statistical methods cannot be used to point the way in certain aspects of legislation.

In so far as the articles are expository they may appeal to the general scientific reader interested in such matters; indeed it is difficult to see for whom else the collection can be intended.

Apparitions

Being the Seventh Frederic W. H. Myers Memorial Lecture, 1942. By G. N. M. Tyrrell. Pp. viii+123. (London: Society for Psychical Research, 1943.) 3s. 6d.

IT might be thought that Mr. Tyrrell, in choosing the subject of apparitions for the seventh Frederic W. H. Myers Memorial Lecture, was returning to that kind of anecdotal psychical research which is gradually giving way to a more quantitative and philosophical approach. Such, however, is not the case, for in this lecture Mr. Tyrrell is approaching the subject of apparitions from the only angle from which such phenomena can be properly approached,

namely, that which supposes such appearances to be in general hallucinations of a peculiarly interesting and important kind. Mr. Tyrrell supposes that apparitions are caused by the existence of what he calls "idea patterns", by which he means images which are the direct expressions of the agent's ideas and which are externalized as full-blown hallucinations. What is seen is, to use Mr. Tyrrell's phrase, merely "a psychological marionette", the outward expression of a drama which has been thrown into sensory form, and thus a close and detailed study of its production might be expected to throw considerable light on the various strata making up the human personality. It is true that the facts of collective hallucination and similar experiences, which are apparently shared by both children and animals, are not altogether easy to fit comfortably into the framework Mr. Tyrrell has constructed for them; but generally speaking it would be a mistake to lay too much emphasis on incongruities and difficulties which may eventually be found to be superficial rather than fundamental. What Mr. Tyrrell has done has been to direct attention to the need of examining apparitions from the psychological and philosophical points of view; and such an attempt can only be made by those who have rid themselves of naïve assumptions bred from prejudice and lack of acquaintance with the facts. Such an approach is to be welcomed and will, it is hoped, be extended to other branches of the studies comprised under the comprehensive title of psychical research.

An Encyclopædic Dictionary of Science and War

By Surgeon Rear-Admiral C. M. Beadnell. Pp. xviii+293. (London: Watts and Co., Ltd., 1943.) 25s. net.

IT is in the nature of things that one is more intensely critical of dictionaries than almost any other documentary material, so let it be said at once that the present volume is a remarkable achievement for a single author. He is well known as a life-long student of ballistics, and, carefully avoiding the ground recently covered by other technical dictionaries and encyclopedias, has contrived to concentrate on ballistics and such sections of chemistry as explosives, war gases, and the elements, as have primary functions in war-time. Where desirable, extensive tables give the data in easily accessible form, with one dire exception: if one requires any of the mass of information which is given about an element, one is retarded by the time required to disentangle each item, since for each element the items run on. There are inevitably some obvious misprints in these masses of data. Much space is saved for useful information by a considerable series of contractions, which are listed separately.

While one might insist that the volume be titled "Science in War" instead of "Science and War", one can also blame the author in not being scientific in his diverse use of dimensions. Any magnitude is inevitably accompanied by its translation from, say, inches to centimetres, miles, etc., seconds into hours or years. The author might consider being more scientific in a new edition by adopting throughout the metric system in multiples of 1,000. The inevitable simplification of units in the future would be accelerated if authors of such standardizing books as the present show a lead and indicate the public usefulness of the metric system.

L. E. C. HUGHES.